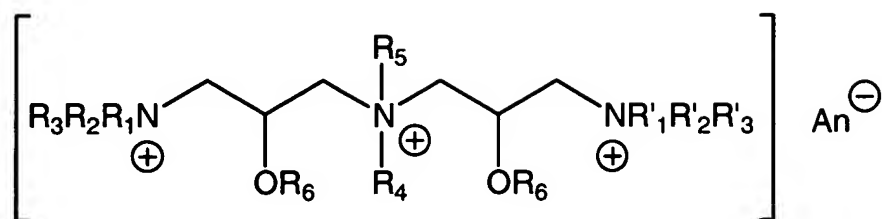


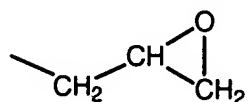
# CLAIMS

## WHAT IS CLAIMED IS:

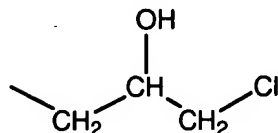
1. A compound of the formula



wherein each R<sub>1</sub>, R'<sub>1</sub>, R<sub>2</sub>, R'<sub>2</sub>, R<sub>3</sub>, R'<sub>3</sub>, R<sub>4</sub> or R<sub>5</sub> is independently selected from the group consisting of alkyl, aryl, aralkyl and -CH<sub>2</sub>-CH(OR<sub>6</sub>)-CH<sub>2</sub>N<sup>+</sup>R<sub>1</sub>R<sub>2</sub>R<sub>3</sub>;  
wherein one or more R<sub>6</sub> group is selected from the group consisting of:



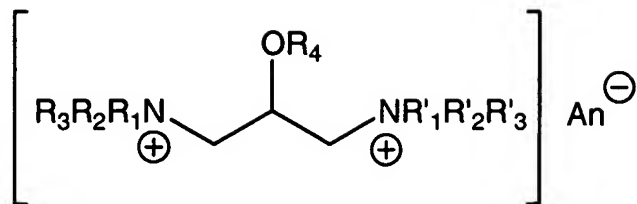
and



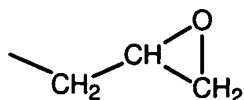
and wherein An<sup>-</sup> is an anion.

2. The compound of claim 1, wherein one R<sub>1</sub> group and the R<sub>4</sub> group comprise a single alkyl group having one or more carbons, and wherein the alkyl group forms part of a cyclic structure that further comprises two positively charged nitrogen centers separated by a three-carbon fragment bearing an -OR<sub>6</sub> group.

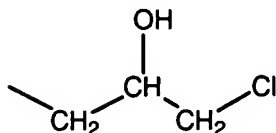
3. A compound of the formula



wherein each  $\text{R}_1$ ,  $\text{R}'_1$ ,  $\text{R}_2$ ,  $\text{R}'_2$ ,  $\text{R}_3$  or  $\text{R}'_3$  group is independently selected from the group consisting of alkyl, aryl, aralkyl and  $-\text{CH}_2-\text{CH}(\text{OR}_4)-\text{CH}_2\text{N}^+\text{R}_1\text{R}_2\text{R}_3$ ; wherein one or more  $\text{R}_4$  group is selected from the group consisting of:



and



and wherein  $\text{An}^-$  is an anion.

4. The compound of claim 3, wherein the  $\text{R}_1$  and  $\text{R}'_1$  groups comprise a single alkyl group having one or more carbons, and wherein said alkyl group forms part of a cyclic structure that further comprises two positively charged nitrogen centers separated by a three-carbon fragment bearing an  $-\text{OR}_4$  group.
5. The compound of claim 3 wherein the one or more  $\text{R}_4$  groups is a 2,3-epoxypropyl group.
6. A modified carbohydrate formed by the reaction of:
  - a. the compound of claims 1,2,3,4 or 5; and
  - b. a carbohydrate having one or more hydroxyl groups.
7. The modified carbohydrate of claim 6 wherein the carbohydrate is a starch.
8. The method of making the compound of claim 1, 2, 3, 4, 5, 6 or 7.
9. The method of using the compound of claims 1, 2, 3, 4 or 5 to make a modified carbohydrate.

10. The method of using the modified carbohydrate of claim 6 as a waste water treatment agent.
11. The method of using the modified carbohydrate of claim 6 in a papermaking process.